

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

DETERMINATION OF CHEMICAL CONSTITUENTS IN HYDRAULIC CEMENT

1.0 PURPOSE

1.1 To set forth procedures for determining the chemical constituents of hydraulic cement by wet chemical and instrumental methods.

2.0 SCOPE

2.1 Procedures are set forth for the following constituents.

Silicone Dioxide (SiO_2)

Ammonium Hydroxide Group (Al_2O_3 , Fe_2O_3 , TiO_2 , and P_2O_3)

Ferric Oxide (Fe_2O_3)

Calcium Oxide (CaO)

Magnesium Oxide (MgO)

Insoluble Residue

Sulfur Trioxide (SO_3)

Loss on Ignition

Alkali Oxides

Sodium Oxide (Na_2O)

Potassium Oxide (K_2O)

3.0 APPLICABLE DOCUMENTS

3.1 ASTM (American Society of Testing and Materials)
C 114 and C 150

4.0 TEST PROCEDURES

4.1 The test procedures to be used are given in Table 1.



Gary L. Robson, Director
Materials Control, Soils
and Testing Division

GLR:d

Attachment

TABLE 1

<u>TEST</u>	<u>TEST PROCEDURES</u>
Silicone Dioxide	ASTM C 114 Reference Method
Ammonium Hydroxide Group	ASTM C 114 Reference Method
Calcium Oxide	ASTM C 114 Reference Method
Insoluble Residue	ASTM C 114 Reference Method
Sulfur Trioxide	ASTM C 114 Reference Method
Loss on Ignition	ASTM C 114 Reference Method (Note 1)
Magnesium Oxide	Atomic Absorption
Ferric Oxide	Atomic Absorption
Sodium Oxide	Atomic Absorption
Potassium Oxide	Atomic Absorption
Aluminum Oxide	Atomic Absorption
Tricalcium Aluminate	Calculated as per Note C of ASTM C 150, Table 1

Note 1 Porcelain crucibles may be used in place of platinum crucibles

Note 2 Qualification data for atomic absorption methods available from Cement and Concrete Reference Laboratory round-robin testing program historical data.